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ABSTRACT

An agricultural training program was implemented with the following objectives: (1) to develop a program suited to the needs of cole crop growers, (2) to promote awareness of the need for training programs of this nature. The target population was comprised of 19 low-income cole farmers. A comparative group with characteristics similar to the experimental group was composed of 18 cole crop growers who did not participate in the program. This program was an experimental agricultural training course, consisting of 10 two-hour lectures presented two evenings a week. It was designed to cover the complete production process involved in the growing of cole crops for processing. The general approach used by the instructor was as follows: (1) Terms familiar to those in attendance were used in preference to technical terms; (2) Ideas or concepts that were deemed new to the growers were expressed in more than one way; (3) The farmers were given the opportunity to ask questions and suggest topics. The training program produced positive results in terms of a better quality product and utilization of more efficient production methods. (CK)

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RESULTS OF A TRAINING PROGRAM FOR COLE CROP GROWERS

by

Carol Nicholson

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Prince Edward Island NewStart Incorporated

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PREFACE

In early 1968 the, then small, staff of Prince Edward Island NewStart Inc. found itself under considerable pressure, both from the community and its funding agency, to begin programs without further delay. It was generally considered, at the time, that training in agricultural occupations would make a major contribution to the disadvantaged people of Kings County and a strong need was perceived, perhaps on the part of local commercial interests, to increase the skills of cole crop growers in the area.

The program, described in this report, was therefore developed and implemented. Unfortunately, no sophisticated research design was used, thereby making objective measurement difficult. Experience suggests that objective measurement of such programs in the short run is difficult, thereby reducing their potential to the researcher.

Subsequent experimental programs have indicated that farm management programs of this type do not relate particularly to the disadvantaged people of the area and consequently do not contribute to the goals of the Corporation. Such programs are being continued, however, by the provincial Departments of Education and Agriculture and will continue to receive a great deal of emphasis under the Comprehensive Development Plan for Prince Edward Island. Experience gained by the Corporation in programs such as this should, therefore, be of value to the government departments and agencies concerned with carrying on such training programs.

Austin L. Bowman
Executive Director

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INTRODUCTION

Cole crop growers in Kings County, Prince Edward Island are faced with problems similar to those faced by other farmers in the Maritime region; many growers feel that these problems stem from the present system of marketing. A report published recently by the Atlantic Development Board states that "many of the so-called marketing problems are, more accurately, production problems and relate to the competitive disadvantages of the Maritime farm enterprise - either in costs of production or in transportation or other such handicaps. Since markets will not yield a profitable price under these circumstances, it has been frequently suggested that the Maritime farmers have 'marketing' problems".[1]

Although improved markets and marketing will be needed if Maritime agriculture is to reach the greatest and most profitable potential, costs related to production must be lowered as well as controls established to ensure that exports are of high quality. According to the same report mentioned above, cole crops are indicated as being the main vegetables for which Maritime producers have a competitive advantage.[2] Since Prince Edward Island produces most of the processed cole crops in Eastern Canada[3] and since acreage and production are rapidly expanding in that locality[4], the province would benefit economically if growers could produce more at lower costs and thus attain some degree of potential in this segment of farming. The Atlantic Development Board reports that Maritime cole crop growers are ignorant of improved production methods[5] and therefore cannot increase their farm income. Existing agencies on Prince Edward Island have no report of any service involving the dissemination of improved production techniques being offered to cole crop growers[6]. The inadequacy of agricultural resource service, coupled with the

farmer's isolation from industrial society, further compounds the problem.

It was assumed that training programs emphasizing improved production techniques could assist cole crop growers in improving their farm situations. As a result, Prince Edward Island NewStart Inc. implemented an agricultural training program, the objectives of which were:

(1) to develop a program suited to the needs of cole crop growers. By presenting a program on the production of cole crops, it was expected that the growers would combine more efficient methods of production resulting in a decreased production cost per acre and/or increased yield per acre;

(2) to promote awareness of the need for training programs of this nature. By establishing the fact that farm income was not reaching its potential due to poor production ratios, and by showing that this could be effectively improved, it was hoped that both farmers and governments would become more aware of the need for such training.

EXPERIMENTAL METHOD

TARGET POPULATION

The target population was comprised of 19 growers who were engaged in cole crop production in Kings County. These growers were all low income farmers with disposable incomes of less than $3,000 per annum; many were immigrants who were well educated in their native country but whose agricultural training was not applicable in some instances in this area. The age of the group ranged from 25 to 45 years. These farmers were especially concerned about their low level of income and the system of marketing available to them[7].

A comparative group, with characteristics similar to the experimental group, was comprised of 18 cole crop growers who did not participate in the program. More complete descriptions of both the experimental and control groups are not available. Those in the experimental and comparative groups comprised the total population of cole crop growers in Kings County.

RECRUITMENT

Prior to implementation, various general meetings were held with the growers, and individual interviews were conducted throughout the county. Each cole crop grower was approached at his farm and invited to attend the lectures, the contents of which were discussed and explained to him. The farmers seemed highly motivated and quite anxious to attend the lectures. Although the project manager reported that all cole crop growers were enrolled in the course, a little less than half of those in this farming sector participated in the program (34 farm operations were represented by 16 farm operations).

The project manager's list of potential recruits included only 24 names, 19 of which attended course sessions. Of these 19 persons, one farmed with his brother, two with their father, making 16 separate farm operations involved.

PROGRAM DESCRIPTION

This program was an experimental agricultural training course, consisting of 10 two-hour lectures presented two evenings a week from March 26, 1968 to April 25, 1968 in a local community hall. It was designed to cover the complete production process involved in the growing of cole crops for processing.

A qualified instructor, with seven years experience working with low-income farmers, was selected to present the course; he had proven ability in communicating with this particular type of farmer and was employed with the Federal Department of Agriculture. Prior to the first lecture, an outline of the complete course was distributed to each grower.

The general approach used by the instructor was as follows:

(1) terms familiar to those in attendance were used in preference to technical terms;

(2) ideas or concepts that were deemed new to the growers were expressed in more than one way, sometimes related to something familiar, and repeated until there was evidence that the material was understood;

(3) the farmer was continually given the opportunity to ask questions;

(4) an attempt was made to stimulate thought, particularly regarding the reasons for performing practices common to crop production, and to encourage consideration of alternate methods of achieving the objective;

(5) the grower was given the opportunity to suggest topics, within the general course outline, that he wished discussed or elaborated upon;

(6) some of the material presented was supported by color slides showing effects on familiar crops, and by yield data from research projects. Pamphlets containing relevant information were also distributed to each grower.

RESULTS

By conducting a course on the production of cole crops, it was expected that those growers involved in the training program would demonstrate more efficient methods of production with a decreased cost per acre and/or increased yield per acre which would be measured by comparing mean production cost per acre and mean yield per acre previous to NewStart's entry into and following NewStart's exit from the farming sector. Because of inadequate data collection, it cannot be stated to what degree this objective was realized; however, some inferences can be made from data obtained at the local processing plant, the only processing plant through which farmers in this area market their produce, and interviews with management involved in cole crop processing. Yield per acre data is presented in TABLES 1, 2, & 3. Raw data can be found in APPENDICES A and B.

TABLE 1

Mean yield/acre of experimental and comparative groups (independent samples) for 1967

Yield/acre	Brussel Sprouts	Cauliflower	Broccoli*
Growers on course	6969.6 lbs.	10460.6 lbs.	6049.4 lbs.
Growers not on course	3157.8 lbs.	6195.1 lbs.	2859.6 lbs.
Degrees of freedom	17	13	13
Significance of pre - pre mean differences	significant at .01 level	not significant	significant at .01 level

* Broccoli was grown only in 1967.

Analysis of data found in TABLE 1 indicates that those growers who participated in the program were representative of the larger, more successful segment of the target population. A significant difference in means of the comparative and experimental groups exists both for brussels sprouts and broccoli; there is no significant difference in means of the comparative and experimental groups for cauliflower though significance is approached at the .05 level.

TABLE 2

Mean yield/acre of experimental and comparative groups (independent samples) for 1968.

Yield/acre	Brussel Sprouts	Cauliflower
Growers on course	7439.1 lbs.	12075.9 lbs.
Growers not on course	4308.2 lbs.	7678.6 lbs.
Degrees of freedom	15	16
Significance of post - post mean differences	significant at .05 level	significant at .01 level

A similar analysis of data found in TABLE 2 indicates that the brussel sprouts yield per acre mean difference is not as significant for 1968 as for 1967. A closer look at the data reveals that the comparative group increased its mean yield per acre by approximately 1200 pounds, whereas the experimental group's mean yield per acre increased by only 400 pounds. Thus, it appears that the comparative group, the non-treatment group, increased their yield per acre more substantially than the experimental group who had been exposed to the training program. In the instance of cauliflower yield per acre, the situation is reversed - yield per acre mean difference for the comparative and experimental groups is significant at the .01 level. A closer look at the data reveals that the comparative group increased its mean yield per acre by 1484 pounds and the experimental group increased its mean yield per acre by 1616 pounds. Thus it appears that yield per acre increase does not result from a group's exposure to a training program.

In light of the above results, a more sophisticated method of analysis was applied to the data available, that of correlated samples. Due to some farmers terminating their cole crop farm operations in 1967, others establishing cole crop farm operations in 1968, as well as some practicing the rotation of crops, group sizes were relatively reduced (see TABLE 3 below).

TABLE 3

Mean yield/acre of experimental and comparative groups (correlated samples)

Yield/acre	1967	1968	Degrees of freedom	Significance of pre-post mean differences
Growers on course				
Brussel Sprouts	6094.1 lbs.	7448.7 lbs.	7	not significant
Cauliflower	11553.6 lbs.	14558.7 lbs.	5	not significant
Growers not on course				
Brussel Sprouts	5470.5 lbs.	5299.1 lbs.	4	not significant
Cauliflower	7683.6 lbs.	8992.4 lbs.	5	not significant

Analyses results proved non-significant possibly because of small sample sizes; however, some inferences may be drawn from a superficial examination of the data. According to TABLE 3, the experimental group increased its brussel sprout and cauliflower yields per acre by 1355 and 3005 pounds respectively, which are very substantial increases. The comparative group, on the other hand, decreased its brussel

sprout yield per acre and increased its cauliflower yield per acre by 172 and 1308 pounds respectively. The experimental group, consisting of those farmers exposed to the training program, substantially increased its yields per acre.

Interviews with managers of the local processing and fertilizer plants, who had attended some course sessions, indicated that both felt more training programs of this nature were needed and that programs such as the one offered by Prince Edward Island NewStart should be duplicated. In their opinion, the program produced positive results with regard to increased yield per acre and better quality of produce. TABLE 4 gives a breakdown of produce by grade and weight which was bought by the local cole crop processing plant.

TABLE 4

Pounds of Produce by Grade Bought from Local Cole Crop Growers by Langley's Fruit Packers Limited, Montague, Prince Edward Island*

	1967	1968	Difference
Brussel Sprouts			
Fancy	605472 lbs.	515375 lbs.	-80097 lbs.
Choice	14318 lbs.	157861 lbs.	+143543 lbs.
Cauliflower			
Fancy	358232 lbs.	563813 lbs.	+205581 lbs.
Choice	19241 lbs.	163859 lbs.	+154618 lbs.

* Prices per pound remained the same in both years, 1967 and 1968.

With the exception of brussel sprouts, fancy grade, the local processing plant bought more cole crops from the growers in 1968 than in 1967; on the whole, approximately 500,000 pounds more cole crops were sold to the plant. However, it must be remembered that in 1967, this processing plant also bought and processed approximately 200,000 pounds of broccoli, thereby making a net increase of 300,000 pounds in 1968.

A secondary objective of this program was to promote awareness of the need for training programs of this nature by establishing the fact that farm income was not reaching its potential due to poor production ratios, and by showing that this could be effectively improved. By doing so, it was expected that both growers and government would initiate further training programs of this nature. Analysis of a questionnaire, distributed to course participants during the last sessions of the course, indicated that the growers were quite aware of the need for such programs as indicated by questionnaire results below:

1. 83.3 per cent of the growers were not satisfied with the disposable income provided by their farms;

2. all growers felt that they had acquired new ideas or knowledge during the course which would help improve the net income position of their farm operation;

3. all of the growers agreed that if a similar course of ten lectures were to be given in the fall they would hope to be able to attend all of the lectures;

4. all liked the method used, especially where the complete business of growing a crop is looked at in sequence;

5. all found the lectures easy to follow;

6. all of the growers agreed that the training method used or this method modified would have sufficient merit to be repeated or duplicated again;

7. (a) if a text book were to be provided on the subject of cole crops or vegetable production, 50% of the participants felt that cole crop growers as a whole would refer to it often and 50% felt that cole crop growers would refer to it occasionally;

(b) if a text book were to be provided on the subject of cole crop or vegetable production, 70% of the growers felt that they would refer to it often while 30% felt that they would refer to it occasionally.

To date (September 21, 1970) no action has been taken by growers, government or private industry to provide another program of this nature to cole crop growers.

A report submitted by the instructor following course termination stated that, "Most participants seemed to maintain an interest throughout the course. Attendance increased as the course progressed. One individual drove 21 miles, one way, and once commenced never missed a following session. Another expression of interest was shown by one individual who inquired on three or four occasions, about a source of books pertaining to some of the material that was presented. The questions and discussions indicated that the majority of the participants were interested and undoubtedly all gained some benefit from the course."[8]

A general meeting of those farmers involved in the course was held approximately six months after course termination in December, 1968. All growers (nine course participants were present) agreed that the quality and quantity of

their produce had increased; 71.4 per cent felt they had no increase in their disposable income, while 28.6 per cent felt that their income had increased slightly. The amount of cole crops grown for which there was no sale was estimated by the growers to be about 40 per cent of the total pounds produced. Since the local processing plant buys only fancy or choice grade product, this figure could represent the amount of produce of either standard or substandard grades. However a report, A Projection of the Potato Industry in Prince Edward Island, written by Anne Cunningham for the Prince Edward Island Department of Industry and Natural Resources in 1970, states that the processing plant in question is operating at approximately 45 per cent of its potential capacity - this estimate is based on Industrial Enterprises Inc., 1967 statistics[9]. Thus, it appears that these growers could have sold their total crop production if the processing plant had been operating at 100 per cent capacity. Because of this situation, growers questioned the possibility of obtaining some counselling with regard to marketing their produce. Since the local processing plant grows much of what it needs and is increasing its own production, there seems little likelihood of the grower raising his income through the growing of cole crops unless alternate marketing facilities are made available to him.

CONCLUSIONS

Though results imply that there was no significant increase in mean yield per acre for both the experimental and comparative groups, it cannot be stated whether production cost per acre decreased. Subjective analysis indicates that the training program produced positive results in terms of a better quality product and utilization of more efficient

production methods. From this, it may be inferred that net returns per acre did increase and that production costs per acre did decrease.

Though course participants and local management involved in the cole crop processing industry indicated a greater awareness of the need for more training programs of this nature, they have taken no steps to provide a similar program. Reasons for such inactivity could be due to the fact that cole crop growers as a group are poorly organized and communication between growers and local management has been practically non-existent.

RECOMMENDATIONS

1. A systematic evaluation must be inherent in future programs of this nature. Without the implementation of an adequate research design, program success can not be measured. Criteria must be clearly defined so that evaluation of short term objectives (short-term due to the limited time, effort and other resources of Prince Edward Island NewStart) can be effectively measured.

2. Some form of follow-up should be conducted in future programs of this nature. As a beginning, a training program such as this has potential but solutions to the farm situation cannot be effected overnight. What is required is a long-term comprehensive program which will cover all aspects of farm adjustment - the whole process of reorganization of the farming community and practice of a new technology requires much more time and resources than Prince Edward Island NewStart has to offer.

3. Since an agricultural program of this type is developed to assist farmers in the solution of their farm problems, it might be beneficial for program success if farmers were to become involved in program design. Farmers know only too well what their situation is and what it should be and must be allowed to formulate program goals which are consistent with their situation.

4. A primary objective of future programs might be to improve communication and co-operation between members of the secondary and primary sectors of the cole crop industry.

FOOTNOTES

1. Atlantic Development Board. The Competitive Position of Maritime Agriculture. Background Study # 2. (Queen's Printer, Ottawa, 1969), p. 19.

2. Ibid. p. 169.

3. Atlantic Development Board. Maritime Farm Enterprise Analysis Appendix. Background Study # 2, p. 244. (Queen's Printer, Ottawa, 1969), p. 244.

4. Canadian Department of Agriculture. Canadian Agricultural Outlook Conference 1969. (Queen's Printer, Ottawa, 1969), p. 147.

5. Atlantic Development Board. The Competitive Position of Maritime Agriculture op. cit., p. 29.

6. These agencies are: (1) The Prince Edward Island Farmer's Union. (2) The Prince Edward Island Federation of Agriculture.

7. Interview with agricultural specialist on July 15, 1969.

8. Report submitted by instructor to agricultural specialist on May 3, 1968.

9. Cunningham, Anne A Projection of Potato Production in Prince Edward Island (Prince Edward Island Department of Industry and Natural Resources, Charlottetown, Prince Edward Island, 1970), p. 43.

APPENDIX A

	Experimental Group		Comparative Group	
	1967	1968	1967	1968
Brussel Sprouts yield lbs/acre	11922.5	3772.2	6396.0	5877.0
	4481.9	4886.0	2125.2	3148.0
	7879.9	6159.6	1464.7	6362.5
	5953.3	11087.7	3639.0	1312.0
	3358.5	5869.0	5904.8	4685.0
	10659.0	9200.0	4948.7	5786.8
	7644.0	5307.6	438.0	3702.0
	2961.2	8718.0	304.0	3592.0
	7866.0	11952.0	272.0	
			2928.0	
ΣX	62726.2	66952.1	28420.3	34465.4
$\bar{X}$	6969.6	7439.1	2842.0	4308.2
σ	3093.5	2894.5	2317.3	1699.3
N	9	9	10	8
Cauliflower yield lbs/acre	5524.9	7979.4	6606.0	4431.5
	12513.8	11452.1	6775.0	7731.8
	16696.3	17114.7	3358.7	3138.0
	18522.0	3644.7	13022.0	2453.2
	4569.5	15192.5	7438.0	8108.3
	3902.5	17864.3	6746.0	15545.0
	11495.0	5610.0	818.0	11096.0
		17749.0	4797.0	15175.6
				9969.0
				2138.0
ΣX	73224.0	96606.7	49560.7	79786.5
$\bar{X}$	10460.6	12075.8	6195.1	7978.6
σ	5933.4	5742.8	3543.1	4982.9
N	7	8	8	10

	Experimental Group		Comparative Group	
	1967	1968	1967	1968
Broccoli yield lbs/acre	5898.0 6022.7 3882.3 5867.3 8577.0		1733.3 2728.2 4660.0 6526.5 1770.5 2305.0 3777.3 3102.3 1004.0 988.0	
ΣX	30247.2		28595.6	
$\bar{X}$	6049.4		2859.6	
σ	1669.0		1742.1	
N	5		10	

APPENDIX B

	Experimental Group		Comparative Group	
	1967	1968	1967	1968
Brussel Sprouts yield lbs/acre	4481.9	4886.0	6396.0	5877.0
	7879.9	6159.6	1464.7	6362.5
	3358.5	11087.7	5904.8	4685.1
	10659.0	5869.0	10659.0	5869.0
	2961.2	5307.6	2928.0	3702.0
	7866.0	8718.0		
	7644.0	11952.0		
	3902.5	5610.0		
ΣD	10836.9		-857.1	
$(\Sigma D)^2$	117438401.61		734620.41	
ΣD^2	113513278.75		49292690.85	
N	8		5	
Cauliflower yield lbs/acre	5524.9	7979.4	6606.0	4431.5
	12513.8	11452.1	6775.0	7731.8
	16696.3	17114.7	3358.6	3138.0
	4569.5	17864.3	13022.0	8108.3
	11495.0	17749.0	6746.0	15175.6
	18522.0	15192.5	9594.0	9969.0
ΣD	18030.5		2452.6	
$(\Sigma D)^2$	325098930.25		6015246.7	
ΣD^2	234276628.99		101035809.7	
N	6		6	

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